US006937056B2

(12) **United States Patent**
Binder

(10) **Patent No.: US 6,937,056 B2**
(45) **Date of Patent: Aug. 30, 2005**

(54) **SYSTEM AND METHOD FOR TRANSMISSION-LINE TERMINATION BY SIGNAL CANCELLATION, AND APPLICATIONS THEREOF**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 50 days.

(21) Appl. No.: **10/380,538**

(22) PCT Filed: **Sep. 12, 2001**

(86) PCT No.: **PCT/IL01/00863**

§ 371 (c)(1),
(2), (4) Date: **Aug. 29, 2003**

(87) PCT Pub. No.: **WO02/23839**

PCT Pub. Date: **Mar. 21, 2002**

(65) **Prior Publication Data**

US 2004/0027152 A1 Feb. 12, 2004

(30) **Foreign Application Priority Data**

Sep. 17, 2000 (IL) 138517

(51) **Int. Cl.**[7] **H03K 17/16**
(52) **U.S. Cl.** **326/30**; 326/32; 326/33
(58) **Field of Search** 326/30–34

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(57) **ABSTRACT**

An active terminating device (**30**) for an electrical transmission line with optional line-receiving and line-driving capabilities. The basic device is a two-terminal unit, denoted as a Signal Canceling Unit (SCU), which senses the signal available at its terminals (**34***a*, **34***b*), and applies negative feedback in order to cancel and absorb the signal. When applied to the end of a transmission line (**15***a*, **15***b*) as part of wired communication network, the SCU functions as a terminator. When connected in the middle of such wired transmission line, the SCU splits the transmission line into two separate and isolated segments. In such a configuration, the SCU can be used to isolate a portion of a network from signal degradation due to noise or bridge-tap. Furthermore, the two isolated segments may each employ independent communications, such that no interference exists between the segments. In another embodiment, line receiver functionality is integrated into the SCU, designated as a Signal Canceling and Receiving Unit (SCRU) (**90**). The SCRU can perform all the SCU functions, and also serves as a line receiver in the communication network. In yet another embodiment, line driver functionality is integrated into the SCRU, designated as a Signal Canceling, Receiving and Transmitting Unit (SCRTU) (**120**). The SCRTU can perform all the SCRU functions, and also serves as a line driver in the communication network. Upon connecting multiple SCRTU's to a continuous transmission line, terminated independent point-to-point communication segments are formed.

21 Claims, 13 Drawing Sheets